

# Glossary

*These words and phrases are scientific, medical, or environmental terms used in the Haz-Ed materials.*

**Acid** — a solution that has a pH value lower than 7

**Acute** — occurring only once or more than once within a short period of time

**Acute Exposure** — a single exposure to a hazardous material for a brief length of time

**Administrative Record** — a compilation of documents supporting an administrative action; under Superfund, administrative actions often compel Potentially Responsible Parties (PRPs) to undertake or pay for hazardous waste site cleanups

**Advection** — transportation of contaminants by the flow of a current of water or air

**Adverse Health Effect** — any effect resulting in anatomical, functional, or psychological impairment that may affect the performance of the whole organism

**Anatomical Response** — measure of a change in or damage to the anatomy of a species as a result of exposure to a contaminant

**Aquifer** — an underground rock formation composed of sand, soil, gravel, or porous rock that can store and supply groundwater to wells and springs

**Aquitard** — a barrier to the flow of groundwater in an aquifer

**Assessment** — see site assessment

**Base** — a solution that has a pH value greater than 7

**Benthic** — relating to or occurring at the bottom of a body of water

**Bioaccumulation** — the retention and buildup of chemicals or hazardous substances in the bodies of organisms due to repeated exposure or consuming contaminated organisms lower on the food chain

**Biochemical Response** — measure of a change in or damage to the blood chemistry of a species as a result of exposure to a contaminant

**Biological Degradation** — as used in the Superfund Program, the process by which biological agents can reduce or eliminate risks posed by a hazardous substance through decomposition into less hazardous components

**Biomass** — the amount of living matter in a given area, often refers to vegetation

**Blood Enzyme Level** — measure of a change in the enzymes normally present in the blood of a species as a result of exposure to a contaminant

**Carcinogen** — a substance or agent that may produce or increase the risk of cancer

**Chronic Exposure** — continuous or repeated exposure to a hazardous substance over a long period of time

**Clay Soil** — soil composed chiefly of fine particles

**Clean Air Act** — gives EPA authority to set standards for air quality and to control the release of airborne chemicals from industries, power plants, and cars

**Cleanup** — the process of removing, treating, or disposing of contaminants at a site and restoring the site to a condition that is not dangerous to people or the environment

**Clean Water Act** — a Federal law that controls the discharge of pollutants into surface water in a number of ways, including discharge permits

**Community** — an interacting population of various types of individuals (or species) in a common location; a neighborhood or specific area where people live

**Community Involvement** — a process in which the concerns of local citizens are addressed during the Superfund process

**Composting** — the decomposition of yard waste and vegetable scraps into organic material

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** — enacted in 1980 and nicknamed Superfund, this law provides the authority through which the Federal government can compel people or companies responsible for creating hazardous waste sites to clean them up. It also created a public trust fund, known as the Superfund, to assist with the cleanup of inactive and abandoned hazardous waste sites or accidentally spilled or illegally dumped hazardous materials.

**Concentration** — the amount of one material dispersed or distributed in a larger amount of another material

**Condensation** — a part of the hydrologic cycle during which water vapor turns into a liquid

**Confined Aquifer** — an aquifer bounded on the top by confining materials such as rock formations

**Contaminant** — harmful or hazardous matter introduced into the environment

**Contaminant Level** — a measure of how much of a contaminant is present

**Contamination** — the introduction of harmful or hazardous matter into the environment

**Corrective Action** — cleanup of hazardous waste contamination at non-Superfund sites

**Corrosive** — capable of chemically wearing substances away (corroding) or destroying them

**Deep-Well Injection** — injection of hazardous wastes into deep wells underground

**Dense Non-Aqueous Phase Liquid (DNAPL)** — liquid contaminants that are relatively insoluble and heavier than water; also known as “sinkers” because they will sink to the bottom of an aquifer, where they become especially difficult to detect and clean up

**Discharge Areas** — locations where groundwater flows or is discharged to the surface

**Discovery** — the initial activity in the Superfund process where a potentially contaminated site is reported to EPA or a similar state or local agency

**Diversity** — variety; differences among and within species

**Early Action** — a response action that addresses the release or possible release of hazardous substances and can be resolved within a short period of time

**Ecology** — study of the relationships of living organisms to each other and to their environment

**Ecosystem** — a specialized community, including all the component organisms, that forms an interacting system; for example, a marsh, a shoreline, a forest

**Emergency** — a situation or occurrence of a serious nature that develops suddenly and unexpectedly and demands immediate action

**Emergency Response** — a response action to situations that may cause immediate and serious harm to people or the environment

**Environment** — totality of conditions surrounding an organism

**Environmental Risk** — likelihood, or probability, of injury, disease, or death resulting from exposure to a potential environmental hazard

**Epidemiology** — study of causes of disease or toxic effects in human populations

**Estuary** — region of interaction between rivers and near-shore ocean waters, where tidal action and river flow create a mix of fresh and salt water; may include bays, mouths of rivers, salt marshes, and lagoons; brackish water ecosystems; may shelter and feed marine life, birds, and wildlife

**Evaporation** — a part of the hydrologic cycle during which liquid water turns into water vapor

**Exposure** — coming into contact with a substance through inhalation, ingestion, or direct contact with the skin; may be **acute** or **chronic**

**Fauna** — animal life

**Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)** — a Federal law that requires labels on pesticides that provide clear directions for safe use; FIFRA also authorizes EPA to set standards to control how pesticides are used

**Fertilizers** — nitrogen- and phosphate-rich chemical compounds that are used to increase the productivity of croplands; fertilizer production usually includes the use and disposal of petrochemicals

**Flora** — plant life

**Fresh Water** — water resources free from salt that are critical to living organisms; 3 percent of the water on Earth is fresh (the rest is salt water), and 95 percent of fresh water resources are groundwater

**Groundwater** — water found beneath the Earth's surface that fills pores between materials, such as sand, soil, or gravel

**Habitat Encroachment** — term used to describe the way natural habitats are destroyed as human development of new areas continues to grow and expand, or pollution damages the environment

**Hazard Ranking System (HRS)** — the method EPA uses to assess and score the hazards posed by a site that takes into account the nature and extent of contamination and the potential for the hazardous substances to migrate from the site through air, soil, surface water, or groundwater; HRS scores are used to determine whether a site should be placed on the National Priorities List (NPL)

**Hazardous Chemical** — see Hazardous Substance

**Hazardous Material** — see Hazardous Substance

**Hazardous Substance** — a broad term that includes all substances that can be harmful to people or the environment; toxic substances, hazardous materials and other similar terms are subsets of hazardous substances

**Hazardous Waste** — by-products or waste materials of manufacturing and other processes that have some dangerous property; generally categorized as corrosive, ignitable, toxic, or reactive, or in some way harmful to people or the environment

**Health Risk Assessment** — scientific evaluation of the probability of harm resulting from exposure to hazardous materials

**Heavy Metals** — metals such as lead, chromium, copper, and cobalt that can be toxic at relatively low concentrations

**Histopathological Test** — test that examines the structure of cells and tissues to determine if any damage has been caused by exposure to a contaminant

**Hydrologic Cycle** — the process of evaporation, transpiration, condensation, precipitation, infiltration, runoff, and percolation in which water molecules travel above, below, and on the Earth's surface

**Ignitable** — capable of bursting into flames easily

**Infiltration** — the movement of water through the ground surface into the unsaturated zone

**Information Repository** — a set of current information, technical reports, and reference documents regarding a Superfund site; it should be located in a public building that is convenient for local residents, such as a public school, city hall, or public library

**Innovative Treatment Technologies** — remedies that have been tested, selected, or used for treating hazardous waste or contaminated materials but don't have much information on cost and performance

**Inorganic Compounds** — chemical compounds that do not contain carbon, usually associated with life processes; for example, metals are inorganic

**Landfill** — a location for the disposal of wastes on land designed to protect the public from hazards in waste streams; **sanitary landfills**, designed to receive municipal solid waste, are distinguished from **hazardous waste landfills**, designed to isolate hazardous substances

**Liability** — under Superfund, a party responsible for the presence of hazardous waste at a site is also legally responsible for acting and paying to reduce or eliminate the risks posed by the site

**Light Non-Aqueous Phase Liquid (LNAPL)** — liquid contaminants that are relatively insoluble and lighter than water; also known as "floaters" because they will float on top of an aquifer

**Long-Term Action** — a response action that eliminates or reduces a release or threatened release of hazardous substances that is serious but not an immediate danger to people or the environment and may take years to complete (also known as a remedial action)

**Migration** — as used in the Superfund program, the movement of a contaminant; actual or potential migration is one measure of the dangers created by a contaminant

**Migration Pathways** — the routes a contaminant may move around in the environment (e.g., soil, groundwater, surface water, air)

**Municipal Solid Waste** — garbage that is disposed of in a sanitary or municipal solid waste landfill

**Mutagenic** — causing alteration in the DNA (genes or chromosomes) of an organism

**National Priorities List (NPL)** — EPA's list of the most serious uncontrolled or abandoned hazardous waste sites, identified as candidates for long-term action using money from the Superfund trust fund

**Organic Compounds** — chemical compounds that contain carbon, an element usually associated with life processes

**Percolation** — the movement of groundwater from the unsaturated zone to the saturated zone

**Permeability** — the degree to which groundwater can move freely through an aquifer measured by the interconnection of pores and fractures

**Pesticides** — chemical compounds used to control insects and other organisms that may reduce agricultural productivity; most are **toxic**

**pH** — a measurement of the acidity or alkalinity level of a solution

**Physiological Response** — measure of physical change or damage in a species as a result of exposure to a contaminant

**Plume** — an area of groundwater contamination

**Pollution Prevention** — a strategy that emphasizes reducing the amount of pollution or waste created, rather than controlling waste or dealing with pollutants after they have been created

**Population** — group of similar individuals living in the same general area

**Pore** — an open space in rocks and soils

**Porosity** — the ability of rock material to store water

**Potentially Responsible Parties (PRPs)** — any individual or company potentially responsible for, or contributing to, contamination at a Superfund site

**Precipitation** — a part of the hydrologic cycle during which condensed water vapor in the air falls to the ground in the form of rain, snow, sleet, and so forth

**Preliminary Assessment (PA)** — the process of collecting and reviewing available information about a known or suspected hazardous waste site or release that is used to determine if the site requires further study

**Probability** — chance that a given event will occur

**Proposed Plan** — a plan for cleaning up a Superfund site submitted by EPA and subject to public comments

**Ratio** — the relationship in quantity, amount, or size between two or more things

**Reactive** — one of four categories of hazardous waste; substances capable of changing into something else in the presence of other chemicals, usually violently or producing a hazardous by-product

**Recharge Areas** — areas where infiltration to aquifers occurs

**Record of Decision (ROD)** — a public document that explains the cleanup method that will be used at a Superfund site, based on EPA studies, public comments, and community concerns

**Recycling** — the reuse of products or by-products or other materials that could become wastes if discarded instead of being used

**Relative Abundances** — measure of the population of one species in an ecosystem as compared to other species within that same ecosystem; number of individuals in any given species compared to the total number of individuals in the community

**Release** — when a hazardous substance goes from a controlled condition (for example, inside a truck, barrel, storage tank, or landfill) to an uncontrolled condition in the air, water, or land

**Residual Contamination** — contaminants left at a site after the risks posed by the site have been reduced and the site no longer threatens people or the environment, or that currently is not possible to remove

**Resource Conservation and Recovery Act (RCRA)** — a Federal law that authorizes EPA to set standards for companies producing, handling, transporting, storing, and disposing of hazardous waste

**Response Action** — an action taken by EPA or another Federal, state, or local agency to address the risks posed by the release or threatened release of hazardous substances — generally categorized as Emergency Responses, Early Actions, and Long-Term Actions

**Responsible Party** — a person or business that is responsible for a hazardous site; whenever possible, EPA requires Responsible Parties, through administrative and legal actions, to clean up the sites they have contaminated

**Risk** — likelihood or probability of injury, disease, or death

**Runoff** — the amount of precipitation that runs over the ground surface and returns to streams, rivers, or other surface water bodies. It can collect pollutants from air or land and carry them to receiving waters

**Safe Drinking Water Act (SDWA)** — a Federal law that authorizes EPA to set national standards for drinking water and gives EPA authority to control the disposal of hazardous waste into groundwater

**Sampling** — the collection of representative specimens analyzed to characterize site conditions

**Saturated Zone** — an underground geologic layer in which all pores and fractures are filled with water

**Saturation** — the degree to which a geologic formation is filled with water

**Site Assessment** — the process by which EPA determines whether a potential Superfund site should be placed on the National Priorities List (NPL); it can consist of a Preliminary Assessment (PA) or a combination of a PA and a Site Inspection (SI)

**Site Cleanup** — see Cleanup

**Site Discovery** — see Discovery

**Site Inspection (SI)** — a technical phase of the Superfund process, following the Preliminary Assessment (PA), during which EPA gathers information (including sampling data) from a site needed to score the site using the Hazard Ranking System (HRS) to determine whether the site should be placed on the National Priorities List (NPL)

**Solvents** — chemical products that are used to dissolve other compounds; typically found in cleaners and used in petrochemical processes

**Sorption** — a process in which something is taken up and held; as used in the Superfund Program, sorption refers to technologies that use a sorption agent that attracts, takes up, and holds hazardous waste for removal



**Source Reduction** — the design, manufacture, or use of products that in some way reduces the amount of waste that must be disposed of; examples include reuse of by-products, reducing consumption, extending the useful life of a product, and minimizing materials going into production

**Source Separation** — the segregation of hazardous materials from nonhazardous materials to reduce the volume of hazardous waste that must meet special removal and disposal requirements; it is a method used by industry to control costs

**Species Richness** — number of species in a community

**Superfund** — see CERCLA

**Superfund Trust Fund** — a public trust fund created with passage of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 1980 to be used to help pay for the cleanup of abandoned hazardous waste sites

**Surface Impoundments** — lined ponds storing hazardous waste

**Surface Water** — bodies of water that form and remain above ground, such as lakes, ponds, rivers, streams, bays, and oceans

**Technical Assistance Grant (TAG)** — funds given to communities for the purpose of hiring advisors to interpret technical information related to the cleanup of Superfund sites

**Toxic** — poisonous

**Toxic Substances Control Act (TSCA)** — a Federal law that empowers EPA to require the chemical industry to test chemicals and provide safety information before they are sold

**Toxicology** — study of the effects of poisons in living organisms

**Transpiration** — a part of the hydrologic cycle in which water vapor passes out of living organisms through a membrane or pores

**Treatment Technologies** — processes applied to hazardous waste or contaminated materials, to permanently alter their condition through chemical, biological, or physical means, and reduce or eliminate their danger to people and the environment

**Unconfined Aquifer** — an aquifer not bound by confining material

**Underground Storage Tank** — an underground tank storing hazardous substances or petroleum products

**Unit of Measure** — a predetermined quantity (as of length, time, or heat) adopted as a standard of measurement

**Unsaturated Zone** — an underground geologic layer in which pores and fractures are filled with a combination of air and water

**Volatile Organic Compounds (VOCs)** — organic (carbon-based) compounds that evaporate at room temperature

**Waste-to-Energy Incinerator** — a process unit designed to burn solid, liquid, or gaseous materials under controlled conditions to reduce waste volume and produce energy

**Water Table** — the upper limit of a geologic layer wholly saturated with water

**Water Table Aquifer** — an unconfined aquifer in which the water table can rise and fall

**Well** — a hole sunk into the ground to reach a supply of water